

1 What is claimed is:

2 1. A process for making an integrated circuit package comprising:

3 providing a substrate having a chip-attaching surface;

4 applying an A-stage liquid paste on the chip-attaching surface of the substrate, the
5 A-stage liquid paste including a thermosetting material and a solvent;

6 heating the substrate to remove the solvent of the A-stage liquid paste in a manner
7 that the A-stage liquid paste is transformed into a dry B-stage film layer;

8 attaching a chip to the chip-attaching surface of the substrate by the B-stage film layer,
9 the B-stage film layer being active without fully cured;

10 electrically connecting the chip with the substrate having the B-stage film layer; and

11 forming a molding compound on the chip-attaching surface of the substrate, the
12 packing pressure for the molding compound being larger than the chip-attaching
13 pressure in a manner that the B-stage film layer re-bonds the chip to improve
14 effective chip-bonding area.

15 2. The process in accordance with claim 1, wherein the packing pressure is
16 1000psi~1500psi during the forming step of the molding compound.

17 3. The process in accordance with claim 1, wherein an temperature is provided from
18 150°C to 200°C during the forming step of the molding compound to transform the
19 B-stage film layer into a C-stage film layer.

20 4. The process in accordance with claim 3, wherein the temperature in the forming step
21 of the molding compound is higher than the temperature in the heating step of the
22 substrate.

23 5. The process in accordance with claim 1, wherein the B-stage film layer has a glass
24 transition temperature (T_g) higher than -10 °C.

25 6. The process in accordance with claim 5, wherein the chip attaching temperature is
26 higher than the glass transition temperature (T_g) of the B-stage film layer.

27 7. The process in accordance with claim 1, wherein the A-stage liquid paste is formed

- 1 by printing, screen printing, stencil printing, spraying, spin coating or dipping.
- 2 8. The process in accordance with claim 1, wherein the B-stage film layer is bonded
3 with the back surface of the chip.
- 4 9. The process in accordance with claim 1, wherein the B-stage film layer is bonded
5 with the active surface of the chip.
- 6 10. The process in accordance with claim 1, wherein the B-stage film layer and the
7 molding compound are cured simultaneously during the forming step of the molding
8 compound.
- 9 11. A process for making an integrated circuit package comprising:
10 providing a substrate having a chip-attaching surface;
11 applying an A-stage liquid paste on the chip-attaching surface of the substrate;
12 heating the substrate to transform the A-stage liquid paste into a B-stage film layer,
13 the B-stage film layer having a glass transition temperature (T_g);
14 attaching a chip to the chip-attaching surface of the substrate, the substrate is heated
15 being higher than the glass transition temperature (T_g) of the B-stage film layer to
16 make the B-stage film layer adhere the substrate and the chip, and the B-stage film
17 layer being active without fully cured;
18 electrically connecting the chip with the substrate having the B-stage film layer; and
19 forming a molding compound on the chip-attaching surface of the substrate, the
20 packing pressure for the molding compound being larger than the chip-attaching
21 pressure in a manner that the B-stage film layer re-bonds the chip to improve
22 effective chip-bonding area.
- 23 12. The process in accordance with claim 11, wherein the packing pressure is
24 1000psi~1500psi during the forming step of the molding compound.
- 25 13. The process in accordance with claim 11, wherein the B-stage film layer and the
26 molding compound are cured simultaneously during the forming step of the molding
27 compound.

- 1 14. The process in accordance with claim 13, wherein an temperature is provided from
2 150°C to 200°C during the forming step of the molding compound to transform the
3 B-stage film layer to a C-stage film layer.
- 4 15. The process in accordance with claim 11, wherein the glass transition temperature
5 (T_g) of the B-stage film layer is higher than -10°C.
- 6 16. The process in accordance with claim 11, wherein the chip-attaching surface of the
7 substrate is smaller than 1.5 times the active surface of the chip in area.
- 8 17. A process for making an integrated circuit package comprising:
9 providing a substrate having a chip-attaching surface;
10 printing a chip bond material on the chip-attaching surface of the substrate;
11 partially curing the chip bond material on the substrate to be B-stage;
12 attaching a chip to the chip-attaching surface of the substrate by the chip bond
13 material;
14 electrically connecting the chip and the substrate having the chip bond material in
15 B-stage; and
16 forming a molding compound and fully curing the chip bond material on the substrate
17 to transform into C-stage.
- 18 18. The process in accordance with claim 17, wherein the chip bond material in B-stage
19 has a glass transition temperature (T_g) higher than -10 °C.
20
21
22
23
24
25
26
27